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Effects of Lime on Ester based Drilling Fluid

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Abstract: Lime known as calcium hydroxide is one of the important components in invert emulsion drilling fluid. It has been used to activate the emulsifier. However, excessive lime has adverse effect on ester as it could accelerate hydrolysis of ester into its original components; fatty acid and alcohol. This study is to examine the effects of different lime concentrations on invert emulsion ester based drilling fluid. Based on the results, the emulsion stability of ester based drilling fluid decreased with increased of lime concentration. Besides, increased lime concentrations also resulted in higher fluid loss and plastic viscosity. In conclusion, a minimal amount of lime in range of 2-4 grams is adequate to prepare a stable invert emulsion ester based drilling fluid.

Keywords: Hydrolysis of ester, ester based mud, rheology